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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,450	12/26/2000	Reinhard Buendgen	DE9-1999-0087	4189

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EXAMINER	
ALI, SYED J	

ART UNIT	PAPER NUMBER
2127	6

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,450	BUENDGEN, REINHARD	
	Examiner	Art Unit	
	Syed J Ali	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-16 are pending in this application.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

3. Claims 1, 2, 8, 10-12, and 14 are objected to because of the following informalities:

In line 1 of claim 1, "Method" should read "A method".

In line 1 of claim 2, "step" should read "steps".

In line 1 of claim 8, "according claim 2 comprising" should read "according to claim 2 further comprising".

In line 1 of claim 10, "Computer" should read "A computer".

In line 1 of claim 11, "Computer" should read "A computer".

In line 1 of claim 12, "Program" should read "A program".

In line 1 of claim 14, "User" should read "A user".

In line 3 of claim 12, "POE" should read "parallel operating environment [POE]".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Claim 2 recites the limitation "said subprogram means" in line 3.

Claim 4 recites the limitation "the instantiation" in line 3.

Claim 7 recites the limitation "the parallelization parameters" in lines 1-2.

Claim 13 recites the limitation "the prerequisites" in line 2.

There is insufficient antecedent basis for these limitations in the claims.

As per claims 9-11 and 14, it is not clearly understood whether they are independent or dependent claims based on the phrasing of the claims. As is, system, computer program code, or computer program product claims cannot be dependent upon a method claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 6-7, 9-11, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Poulsen et al. (USPN 5,812,852) (hereinafter Poulsen).

As per claim 1, Poulsen teaches the invention as claimed, including a method for running in parallel at least one parallel method associated with a sequential caller program means, the method comprising the step of:

issuing a dedicated parallelization call to a parallel program managing means comprising all control information needed to allow for running said parallel method in parallel (col. 6 line 55 - col. 7 line 6, "since the serial thread executes in parallel regions as well, only N-1 private copies of a global object are required in an N-thread parallel environment; the global copy is used by the serial thread in both serial and parallel regions. These semantics result in implicit copy-in from the global object to one thread's...private copy of the object at the beginning of each parallel region, and implicit copy-out to the global object from the serial thread's 'private' copy at the end of each parallel region").

As per claim 6, Poulsen teaches the invention as claimed, including the method according to claim 1 in which said dedicated parallelization call is done more than once during the run of said caller program means (col. 6 line 55 - col. 7 line 6, "These semantics result in implicit copy-in from the global object to one thread's...private copy of the object at the beginning of each

parallel region, and implicit copy-out to the global object from the serial thread's 'private' copy at the end of each parallel region", wherein a privatization call is made for each parallel region).

As per claim 7, Poulsen teaches the invention as claimed, including the method according to claim 6 in which the parallelization parameters are selectable for each dedicated parallelization call (col. 6 line 55 - col. 7 line 6, "Explicit, on-demand copy-in [to all threads executing a particular parallel region, at the beginning of that parallel region] or copy-out [from some thread executing a particular parallel region, at the end of that parallel region] can also be supported).

As per claim 9, Poulsen teaches the invention as claimed, including a distributed computer system arranged for running in parallel at least one parallel method associated with a sequential caller program means, said system comprising means for performing the step according to claim 1 (col. 6 lines 36-54, "parallel regions execute different threads on different physical processors in a parallel computing system").

As per claim 10, Poulsen teaches the invention as claimed, including a computer program comprising code portions adapted for performing the steps according to the method according to claim 1 when said program is loaded into a computer device (col. 1 lines 27-32, "The present invention relates to computer systems and to parallel computer programming").

As per claim 11, Poulsen teaches the invention as claimed, including a computer program product stored on a computer usable medium comprising computer readable program means for causing a computer to perform the method of claim 1 (col. 1 lines 27-32, "The present invention relates to computer systems and to parallel computer programming").

As per claim 16, Poulsen teaches the invention as claimed, including a parallel program managing tool comprising program means for returning results from parallel executable subprogram means (col. 10 lines 20-44, "the serial thread's storage is used, and the returned pointer value is the address of the global storage object", wherein the global storage object holds the data results from the parallel code region).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulsen in view of Foote et al. (US 2001/0029552) (hereinafter Foote).

As per claim 2, Poulsen teaches the invention as claimed, including the method according to claim 1 further comprising the steps of:

running said parallel method in parallel on a different machine yielding a result (col. 6 lines 36-54, "parallel regions execute different threads on different physical processors in a parallel computing system"); and

returning said result to the caller program (col. 10 lines 20-44, "the serial thread's storage is used, and the returned pointer value is the address of the global storage object", wherein the global storage object holds the data results from the parallel code region).

Foote teaches the invention as claimed, including the following limitations not shown by Poulsen, specifically the method according to claim 1 further comprising the steps of:

serializing input arguments for said subprogram means (paragraph 0014, "copying each argument or result include serializing each argument or result into a byte array when the argument or result implements serialization"); and

deserializing the result (paragraph 0014, "The serialized argument or result is then deserialized by the code that will use the copy...with respect to a target class loader associated with such code").

It would have been obvious to one of ordinary skill in the art to combine Poulsen with Foote since the encapsulating of input and output arguments facilitates communication between different types of systems. This is particularly relevant to the disclosure of Poulsen, since the parallel code executed therein is executed on different physical processors, which may have disparate instruction sets.

As per claim 8, Poulsen teaches the invention as claimed, including the method according to claim 2 further comprising the step of using a program library which comprises program

means for performing the steps of serializing input arguments, running said parallel method in parallel, returning said result and deserializing the result (col. 8 lines 28-45, "Translated program 130 is linked with a runtime support library 140 by a general purpose computer's linker 150 to produce an executable parallel computer program 160").

10. Claims 3-5, 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulsen in view of Goldberg et al. (USPN 6,571,232) (hereinafter Goldberg)

As per claim 3, Goldberg teaches the invention as claimed, including the following limitations not shown by Poulsen, specifically the method according to claim 1 further comprising the step of generating said parallel method with a script program means which in turn is arranged to invoke a stream editor in order to fill a template means with the code or the name of the method to be computed in parallel (col. 6 lines 41-63, "The code generators may also generate build scripts...which allow the query object 408 to be built from the generated source code").

It would have been obvious to one of ordinary skill in the art to combine Poulsen with Goldberg since the disclosure of Poulsen, while providing a means of generating (or translating) source code into parallel code, fails to explicitly state how the parallel code is generated. Poulsen provides a few examples of how the translation may be implemented, including within a compiler, or on the assembly language or object code level. It would have been obvious to one of ordinary skill in the art to use a script builder, as in Goldberg, since it would allow the

developer flexibility in terms of implementing features to take full advantage of a particular system's needs.

As per claim 4, Poulsen teaches the invention as claimed, including the method according to claim 3, further comprising the step of automatically generating the instantiation of said template means (col. 5 lines 7-20, "a library call is inserted that, when executed, instantiates and initializes the appropriate thread-private memory for the compound object, according to either static or dynamic privatization semantics, and initializes the pointer variable to point to this thread private memory").

As per claim 5, Goldberg teaches the invention as claimed, including the method according to claim 4 in which a script is used for generating parallel subprograms (col. 6 lines 41-63, "The code generators may also generate build scripts...which allow the query object 408 to be built from the generated source code").

As per claim 12, Poulsen teaches the invention as claimed, including a program library comprising at least one of:

an implementation of an application interface for procedural parallel operating environment [POE] calls to a parallel program managing means (col. 4 lines 40-50, "the lack of consistent interfaces to these services across different computer systems, makes the above methods inherently non-portable among these various environments", wherein interfaces are provided to remedy this specific problem); and

template means for parallel subprogram means (col. 11 line 60 - col. 12 line 57, wherein the code disclosed therein provides the framework for generating parallel subprograms).

Goldberg teaches the invention as claimed, including the following limitations not shown by Poulsen, specifically script means for generating parallel subprograms (col. 6 lines 41-63, "The code generators may also generate build scripts...which allow the query object 408 to be built from the generated source code").

As per claim 13, Poulsen teaches the invention as claimed, including the library according to claim 12 which provides the prerequisites to generate user library functions that make parallelism transparent to a caller of said user library functions (col. 11 lines 30-40, "Step 530 builds a library structure to facilitate finding private object descriptors...for particular global storage objects and particular thread ids").

As per claim 14, Poulsen teaches the invention as claimed, including a user library generated by means of the library according to claim 12 (col. 8 line 62 - col. 9 line 19, "step 260 inserts a library call, to initialize library data structures for the current parallel region, at the beginning of the parallel region").

As per claim 15, Poulsen teaches the invention as claimed, including the library according to claim 12 which is a dynamic link library (col. 8 lines 28-45, "Translated program 130 is linked with a runtime support library 140 by a general purpose computer's linker 150 to produce an executable parallel computer program 160").

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 5,093,916 to Karp et al. teaches generating parallel code using a compiler.

USPN 5,502,826 to Vassiliadis et al. teaches compounding instructions for parallel execution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Syed Ali
March 16, 2004

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